SX-950 Alignment Procedures

9.1 AM SECTION

- 1. Set function switch to AM.
- 2. Connect AM signal generator through 1k-ohm resistor to AM antenna terminal.
- 3. Set DUPLICATE switch to OFF and connect an AC voltmeter to TAPE 1 REC jacks.
- 4. Set AM SG for 400Hz 30% modulation 100dB output.
- 5. Set SX-950 dial indication and AM SG frequency for 600kHz.
- 6. Adjust **T8** core for maximum reading on AC voltmeter.
- 7. Set SX-950 dial indication and AM SG frequency for 1,400kHz.

- 8. Adjust **TC5** for maximum reading on AC voltmeter.
- 9. Set AM SG for 30dB output.
- 10. Set SX-950 dial indication and AM SG frequency for 600kHz.
- 11. Adjust **T7**, **T8** and **bar antenna core** for maximum reading on AC voltmeter.
- 12. Set SX-950 dial indication and AM SG frequency for 1,400kHz.
- 13. Adjust **TC5**, **TC6** and **TC7** for maximum reading on AC voltmeter.
- 14. Repeat steps 10-13 to eliminate variations in AC voltmeter readings.



9.2 FM TUNER

- 1. Set function switch to FM.
- 2. Set FM MUTING switch to OFF.
- 3. Connect FM signal generator through 300-ohm dummy load to 300 ohm FM antenna terminals.
- 4. Set DUPLICATE switch to OFF and connect AC voltmeter to TAPE 1 REC jacks.
- 5. Set FM SG for 100dB output at 400Hz and 100% modulation.
- 6. Set SX-950 dial indication and FM SG frequency for 87.4MHz.
- 7. Adjust **T4** core for maximum indication on SIGNAL meter.
- 8. Adjust **T6** lower core for center of scale indication on TUNING meter.
- Set FM SG for 8dB output and adjust cores of T1, T2, and T3 for maximum reading on AC voltmeter.
- 10. Set FM SG for 100dB output.
- 11. Set SX-950 dial indication and FM SG frequency for 106MHz.
- 12. Adjust **TC4** for maximum indication on SIGNAL meter.
- Set FM SG for 8dB output and adjust TC1, TC2 and TC3 for maximum reading on AC voltmeter.
- 14. Set FM SG for 100dB output.
- 15. Set SX-950 dial indication and FM SG frequency for 87.4MHz.
- 16. Adjust **T4** core for maximum indication on SIGNAL meter.
- Set FM SG for 8dB output and adjust cores of T1, T2 and T3 for maximum reading on AC voltmeter.
- 18. Repeat steps 10-17 to eliminate variations in AC voltmeter readings.
- 19. After completing above adjustments, adjust **T5** core for maximum reading on AC voltmeter.
- 20. Detune SX-950 to where only noise is received and adjust **T6** lower core for center of scale indication on TUNING meter.
- 21. Set FM SG for 98MHz 60dB output.
- 22. Tune SX-950 for exact center of scale indication on TUNING meter.
- 23. Adjust **T6** upper core for minimum distortion.
- 24. Repeat steps 20- 23 to eliminate variations in point of minimum distortion.
- 25. Set FM SG for 100dB output and adjust VR3 so that SIGNAL meter indicates 5 of the scale.

Multiplex Decoder

- Connect MPX SG (multiplex signal generator) to the external modulator terminals of the FM SG and set the FM SG for external modulation.
- 27. Connect PILOT OUT terminal of MPX SG to horizontal input terminal of oscilloscope.
- 28. Through probe, connect oscilloscope vertical input terminal to terminal No. **19**.
- 29. Set FM SG for 98MHz 60dB output unmodulated.
- 30. Tune SX-950 for exact center of scale indication on TUNING meter.
- Adjust VR1 so that 4:1 frequency ratio Lissajous' (see note below) figure becomes stationary.
- Set FM SG for 1kHz (L or R), ?67.5kHz deviation, 19kHz (pilot signal) and +7.5kHz modulation.
- 33. Adjust VR2 for minimum L-R crosstalk.

Note:

Signal at terminal No. **19** is 76kHz sawtooth wave and MPX SG pilot out is a 19kHz sine wave. These form a Lissajous figure as shown in Fig. 23.





FM Alignment

If FM stations have drifted in their indicated positions on the dial you might be able to get the FM Local Oscillator back to where it belongs with a bit of luck and careful adjustment.

Set the SX-950 tuning pointer to about 98 MHz, at the indicated frequency of a known station very close to 98. Then get another FM receiver tuned to this station to hear the audio content. Verify that the movable fins of the SX-950 tuning variable capacitor are at their approximate midpoint as well. This is critical.

Attempt to adjust TC_4 to locate and tune the known station. Basically you are going to walk the tuning to the correct indicated position. This adjustment will be extremely sensitive. Ideally a plastic tool with a metal blade would be used to trim this adjustment (such as a trimpot tool) but a micro screwdriver may suffice. Be aware the metal screwdriver shaft can affect the capacitance or inductance of the device being adjusted. Anticipate this factor to get it close once the tool is moved away from the device.

IF YOU GET LOST, stop at a station, then use the other FM receiver to match the audio and read the frequency.

Alternately, you can also begin with the tuner set to 98MHz, tune TC_4 to the first audio you can find, then find the station frequency with the other receiver. Adjust the SX-950 to the next station's audio, determine where you are at and keep on repeating until the station is located.

9.3 POWER AMPLIFIER SECTION

- 1. Turn **VR3** and **VR4** fully counter-clockwise before turning on the power.
- 2. Remove jumper plugs connecting POWER IN and PRE OUT jacks.
- 3. Connect 5.1 K-ohm resistor to POWER IN jacks.
- 4. Set power amplifier for no load.
- 5. Set POWER switch to ON.
- 6. Adjust **VR1** for 0V between terminals No. 10 and No. 9.
- Adjust VR2 for 0V between terminals No. 25 and No. 24.
- 8. Adjust **VR3** for 20mV between terminals No. 12(+) and No. 13(-).
- 9. Adjust **VR4** for 20mV between terminals No. 27(+) and No. 28(-).
- 10. Allow set to warm up for at least 10 minutes, then readjust.



